U.S. Rural electrification administration.
Analysis and suggested procedure for the introduction of small (1/4 to 5 H.P.) electrically operated feed grinders... n.d.

ANALYSIS AND SUGGESTED PROCEDURE FOR THE INTRODUCTION OF SMALL (1/4 TO 5 H.P.) ELECTRICALLY OPERATED FEED GRINDERS PREPARED BY UTILIZATION DIVISION, REA

SITUATION

The sizes and engineering principles of feed grinders have followed closely the type of power available, beginning with the period of the stone grist mill powered by the low speed water wheel through the burr type mill powered by internal combustion motors and more recently to the high speed hammer and burr type mills powered by high speed electric motors.

The adaptation of feed grinders has been slow in getting away from the community operated water mill, requiring farmers to haul their feed considerable distances to be ground on a tare or custom basis. Available power has slowly changed this application. The portable gasoline engine-powered grinder was probably the first step away from community grinders. The larger farm operators have utilized tractor power for feed grinders but the small operator has generally been unable to use such privately owned units.

The most recent farm power development and the one that promises to have the greatest revolutionary effect upon type and size of feed grinders is the recent availability of electricity. Electricity provides convenient and economical power for both the small and the large farm operator.

Now that approximately one-fourth of the six million farms in the United States have electricity available for power use, agricultural leaders and feed-grinder manufacturers are ready and anxious to analyze

SITUATION

The size and equipment production of feed grinders has followed closely the type of power available, beginning with the period of the stone grist mill powered by the low speed water wheel through the horse type mill powered by internal combustion motors and more recently to the high speed burner and farm type mills powered by high speed electric motors.

The adaptability of feed grinders has been slow in getting away from the necessarily operated water mill, requiring farmers to haul their feed considerable distances to be ground on a farm or custom basis. Available power has slowly changed this application. The portable gasoline engine-powered grinder was probably the first step from commercial grinders. The large farm cooperatives have utilized tractor power for feed grinders but the small operator has generally been unable to use such privately owned units.

The most recent farm power development and the one that promises to have the great advantage of flexibility of type, size and size of feed grinders is the recent availability of electricity. Electricity provides convenient and economical power for a single small mill and the large farm operator.

Now with approximately one-fourth of the six million farms in the United States have electricity available for power use, agricultural industry and feed-grinder manufacturers are rushing to analyze

the situation and formulate a program that will introduce and adapt the new small-type mill to the greatest economic benefit of all livestock, dairy and poultry producers.

Through the long time program so successfully projected by the Agricultural Experiment Stations and the Agricultural Extension Service, there has been an increasing tendency toward a diversified system of agriculture including livestock, dairy and poultry enterprises. Coupled with this program advocating the balancing of enterprises, there has been an intensive educational program to teach the value of grinding farm-produced feeds and balancing the ration with necessary concentrates to obtain the greatest returns from both the feed and the animals consuming the feed.

The more recent crop adjustment program has stimulated animal production especially in those areas which formerly depended largely on a cash crop such as cotton, tobacco and wheat. The result of this trend has been the establishment of small livestock units, without a livestock specialty such as frequently exists in the older livestock areas. The census shows an increase of approximately five percent in the number of farms reporting cattle (both beef and dairy types), from 1930 to 1935 -- 76.4% and 80.5% respectively. However, the greatest increase has probably occurred since 1935, but census figures are not available for the period. Similar increases in numbers of farms having poultry, swine and sheep might be expected.

One REA Cooperative Manager from Mississippi expresses this situation: "This is a cotton section but more feed is being grown every year. If I can get a small hammer mill and put on some demonstrations, I feel that many of our farmers will buy."

The low farm income makes it essential that the overhead investment be kept as low as possible. The larger farm operator in most cases has justified the investment in a tractor-operated feed grinder because the tractor can be used for other purposes. However, the average small operator has been unable to make such justification.

This has up to the present time generally led the livestock, dairy and poultry farmer to choose between three alternatives (1) a relatively expensive privately owned feed grinder operated with a tractor; (2) the use of custom grinders involving relatively high grinding cost per unit of feed, and the labor and expense involved in transporting the feed to the mill; or (3) the purchase of ready mixed rations at relatively high prices while home grown feeds are used inefficiently, or sold at prices much below the price paid for similar feeds included in the ready mixed rations. Faced with the relatively high cost of each of these alternatives as a means of providing a balanced ration, the average farmer is likely to be indifferent to this essential to economic production and use inefficient feeding practices.

The availability of electricity and the low cost feed grinder offers the farmer an entirely new alternative to more conveniently, effectively and economically prepare home grown feeds for balanced rations to get the greatest return from the feed, and the greatest net return from his livestock enterprises.

The REA, in cooperation with other agricultural agencies, is anxious that electrified farms make the greatest use of electricity on an economically sound basis. The feed grinder program offers a challenge

The low farm income makes it essential that the overhead investment be kept as low as possible. The larger farm operator in most cases has justified the investment in a tractor-operated feed grinder because the tractor can be used for other purposes. However, the average small operator has been unable to make such justification.

This has up to the present time generally led the livestock, dairy and poultry farmer to choose between three alternatives (1) a relatively expensive relatively owned feed grinder operated with a tractor (2) the use of custom grinders involving relatively high grinding cost per unit of feed, and the labor and expense involved in transporting the feed to the mill, or (3) the purchase of ready mixed rations at relatively high prices while home grown foods are used inefficiently, or sold at prices much below the price paid for similar foods included in the ready mixed rations. Faced with the relatively high cost of each of these alternatives as a means of providing a balanced ration, the average farmer is likely to be indifferent to this essential to economic production and use improvement feeding practices.

The availability of electricity and the low cost feed grinder offers the farmer an entirely new alternative to more economically, effectively and economically prepare home grown foods for balanced rations to get the greatest return from the feed, and the greatest net return from his livestock enterprises.

The REA, in cooperation with other agricultural agencies, is anxious that electrified farms make the greatest use of electricity on an economically sound basis. The feed grinder program offers a challenge

to these organizations to adapt and guide an electric appliance to extensive and economic use among a million farmers now receiving electricity and other millions who will likely receive electricity in the near future.

A report form was sent to about 600 REA cooperative managers to get basic estimates of the present situation relative to the small feed grinders and their opinion on the extent to which the grinders might be used by their members. The following partial summary is based on reports received from 137 cooperatives up to this time.

Twenty-two cooperatives report seventy-nine individual electric feed grinder demonstrations held up to date.

Twenty-six cooperatives report forty dealers merchandising small electric feed grinders.

The reports show as a result of this activity only eighty-nine hammer type and fifty-eight burr type electrically operated feed grinders in use, in the areas covered.

It is obvious from these reports that little progress has been made in demonstrating new type electrically operated feed grinders. The effort put forth to date has accomplished very little in actually introducing the unit.

The results of this survey check very closely with field reports from Extension workers and other leaders interested in the farm appliance.

One conclusion can be made from this survey; activity exerted to date has not been coordinated and the strongest leadership has not been tapped. Actual installations during and following the educational period should be the measure of results.

PROCEDURE

The program will be built around the Rural Electrification Administration financed Rural Electric Cooperatives, and involving REA financial assistance and personnel assistance in merchandising and educational activities through the cooperatives. However, in actual projection of the program, cooperating educational agencies are not expected to limit activities to REA cooperative members or areas.

The following is a suggested procedure for presenting the program to other interested agricultural agencies and in conferences make revisions which would better adapt the activity to standard procedures of the cooperating agency, and to existing farm conditions in the region, state, or project areas involved.

1. Conference of REA Utilization Division Specialists with other U.S.D.A. Bureau and Extension Service representatives. The Bureaus and individuals likely to be most interested would be those concerned with Agricultural Engineering and General Livestock, Poultry and Dairy production.

Factual information and analyses prepared by the Utilization Division of REA will be presented. The general discussion will include agency cooperation, adaptations of the small electrically operated feed grinder, economic significance in various states or regions, adaptation to economic production with the three recognized divisions of the livestock industry, significance of feed grinders in the development and use of rural electrification, and other points of interest and significance.

2. Conference of REA Utilization Representatives and Extension Representatives with members of State Agricultural Colleges and Agricultural Extension Services. Those likely to be interested are: One or more members of the Agricultural Engineering, Dairy, Poultry and Animal Husbandry Departments, Agricultural Engineering Specialist, Dairy Specialist, Poultry Specialist and Livestock Specialist; one or more members of the Extension Service Administrative Staff; and a member of the Editorial Staff.

Analyses and tentative plans for projecting the feed grinder program will be presented by the REA representative for discussion. The general discussion will include: Subject matter adaptation of the small electric-type feed grinder, significance in economical production of livestock and poultry and dairy products, application to economical use of electricity on the farm, significance of program in subject matter presentation by subject matter specialists, plans and conclusions as to most feasible way of projecting the program through the Extension Service Staff in cooperation with REA Regional Utilization Representative and REA Cooperative Managers, and detailed procedure for the County Agent, the Cooperative Manager, the Cooperative Directors, the local feed grinder dealers, and local editors so the educational program will get results in proper adaptation and actual installations.

3. The Cooperative Manager, with the consent of his board of directors and through the REA, will arrange for demonstration feed grinder units and will assist with or make installations including a sub-meter installation to record energy input.

4. After the educational program has demonstrated the practicability and feasibility of the equipment, the cooperative board of directors will arrange for group purchasing, or other methods which will result in substantial purchase savings through mass bargaining. They will also, if it is feasible and practical, set up feed grinder purchase loans with funds provided by the REA. It is anticipated that the foundation of educational activity built around demonstrations will be completed by late summer in 1940.

5. The Cooperative Manager will follow through on the installation of feed grinders utilizing result demonstrations and local leaders to keep the program active until the close of the group purchasing campaign period.

6. The REA will provide specifications for structural and performance requirements to be met and guaranteed by manufacturers of feed grinders operated with electric motors of 5 H.P. or less in size. All feed grinder units must meet these specifications in every respect before individual purchase loans will be approved by REA. These specifications may be used in the educational program to establish confidence on the part of the farmers and to compare demonstration results with those guaranteed by the manufacturers.

TERRITORY COVERED

Electric feed grinder activity should eventually reach every state and community where rural electrification is available and where feed grains are produced on the farms for farm consumption.

The need for demonstrating this type of feed grinder appears to be of almost equal importance in every state. However, reports show a few scattered projects (one or two per state in a few states) which have forged ahead with educational demonstrations and may be ready for intensive group purchasing activity immediately.

Using the total number of REA Cooperatives and the personal estimates and response of cooperative managers as the basis of choosing states for immediate activity, the following would be listed: In the South, Alabama, Arkansas, Georgia, Kentucky, Louisiana, North Carolina, Oklahoma and Texas, and in the North Central, Illinois, Indiana, Iowa, Kansas, Minnesota, Missouri, Nebraska, Ohio and Wisconsin.

More preliminary work may be necessary in other states, or the scope of activity may be limited to a few scattered communities. The importance of the activity in these latter states is not minimized, but the scope of activity is more limited, thus placing them in secondary place in the program activity.

MATERIALS TO BE USED

Supplied by REA:

1. Feed grinder structural and performance specifications.
2. General summary and factual data charts on adaptation, performance and efficiency.
3. Information on demonstration unit prices and indications of retail prices by manufacturers.
4. Group purchasing portfolio.

Supplied by REA Cooperative:

1. Meters for measuring energy input on demonstration feed grinder units.

[illegible]

[illegible] Lon [illegible] Lake:

[illegible] known [illegible] importance [illegible]

[illegible] prototype (one or two [illegible]

[illegible] [illegible] with [illegible]

[illegible] group purchasing activity [illegible].

[illegible] the total number [illegible]

[illegible] and response of community [illegible]

[illegible] purchasing activity. [illegible]

[illegible] Anderson, Connie [illegible] Lake [illegible]

[illegible] Lake [illegible] Lib[illegible]

[illegible] M[illegible]ndon, Missouri, [illegible] Cole and [illegible]

More preliminary work may be [illegible]

[illegible] activity may be limited [illegible]

[illegible] of the activity in [illegible]

[illegible] of activity to more limit[illegible]

[illegible] in the program activity.

[illegible]:

1. Food product [illegible]
2. General [illegible] and [illegible]
3. [illegible]
4. Group [illegible].

[illegible] by [illegible]:

1. [illegible]

2. Assist with installation and operation of demonstration units.

Supplied by Colleges of Agriculture and Extension Services:

1. Localized subject matter data to be prepared in chart and outline form for use in demonstration meetings.

2. Localized subject matter material for use in publicity and circular letters.

COOPERATING AGENCIES

Extension Service, Federal and State, associated with appropriate research and extension subject-matter such as rural electrification, and dairy, poultry, and animal husbandry, and including editorial and county cooperation.

Rural Electric Cooperatives and other farm organizations and cooperatives.

Rural electric educational departments of public utility companies.

Manufacturers of feed grinders operated with electric motors of 1/4 to 5 H.P.

Local newspaper editors in the areas where the program is projected.

2. Assist with installation and operation of demonstration units.

Supplied by Colleges of Agriculture and Extension Services:

1. Localized subject matter data to be prepared in short and outlines for use in demonstration meetings.

2. Localized subject matter material for use in publicity and circular letters.

COOPERATING AGENCIES:

Extension Service, Federal and State, associated with private research and extension subject-matter such as rural electrification, and dairy, poultry and animal husbandry, and industrial, cotton and county cooperation.

Rural Electric Cooperatives and other farm organizations and cooperatives.

Public state educational departments of publicity and programs.

Manufacturers of farm equipment operated with electric power of the U.S.E.T.A.

Local newspaper editors, radio and where the arrangements is practicable.